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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,441	09/23/2003	Bingjie Miao	BEA9-2003-0018-US1	2347

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EXAMINER	
CAO, PHUONG THAO	
ART UNIT	**PAPER NUMBER**
2164	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/668,441	MIAO, BINGJIE	
	Examiner	Art Unit	
	Phuong-Thao Cao	2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/23/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to Application filed on 09/23/2003.

2. Claims 1-19 are pending.

Information Disclosure Statement

3. Information Disclosure Statement filed by Applicant on 10/23/2003 was received and considered. A copy of the reviewed Information Disclosure Statement is enclosed with this office action.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1 is directed to an abstract idea which lacks an practical application with tangible result.

Claims 2-6 are rejected as incorporating the deficiencies of claim 1 upon which they depend.

Claim 7 is non-statutory as software per se and no tangible result.

Claims 8-12 are rejected as incorporating the deficiencies of claim 7 upon which they depend.

With respect to claim 13, the "computer-readable signal-bearing medium" is not limited to a tangible media according to Applicant's claim language in claim 14 which states that it may be a modulated carrier signal, not in and of itself a tangible medium. In addition, claim 13 is directed to non-statutory because of no tangible result.

Claims 14-19 are rejected as incorporating the deficiencies of claim 13 upon which they depend.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Lindsay et al. (US Patent No 6,105,020).

As to claim 1, Lindsay et al. teach:

"A method for optimizing a snow flake query" (see [column 3, lines 1-22]) comprising:

"creating a logical node comprised of a child dimension table and all dimension tables rooted at child dimension table" (see [column 6, lines 10-17] wherein each snowflake is equivalent to Applicant's "logical node"); and

"determining commitment of said logical node for push down to a fact table" (see [column 7, line 45-65] and [column 8, lines 1-25]).

As to claim 2, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein the step of determining commitment of said logical node for push down to said fact table includes committing an optimal number of logical nodes for push down to said fact table" (see [column 8, lines 25-54] wherein each snowflake is equivalent to Applicant's "logical node" and the including of snowflake in the plan as disclosed is equivalent to Applicant's "push down to said fact table").

As to claim 3, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein the step of creating a logical node including reducing a snowflake schema to a star schema" (see [column 6, lines 39-45] wherein candidate snowflake root is equivalent to Applicant's "logical node", and a fact table connecting to a set of snowflakes presents a star schema).

As to claim 4, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein the step of determining commitment of said logical node for push down to said fact table includes calculating a cumulative selectivity for said logical node" (see [column 7, lines 5-15] where weight of a matching index is equivalent to Applicant's "cumulative selectivity" and snowflake root table is equivalent to Applicant's "logical node").

As to claim 5, this claim is rejected based on arguments given above for rejected claim 4 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein the step of calculating a cumulative selectivity for said logical node includes a presentation of all selectivities from all dimension tables in said logical node" (see [column 7, lines 5-15] wherein selectivity of all the join predicates is equivalent to Applicant's "all selectivities from all dimension tables").

As to claim 6, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein the step of determining commitment of said logical node for push down to said fact table excludes a dimension table in said logical node from further consideration" (see [column 7, lines 45-65] wherein the disclosure of including only subnodes having filtering effects wherein each subnode represents a dimension table implies the exclusion of a dimension table as illustrated in Applicant's claim language).

As to claim 7, Lindsay et al. teach:

"A system for optimization of snow flake query" (see [column 3, lines 1-22]) comprising:

"a fact table" (see [column 6, lines 9-15]);

"a least two child dimension tables" (see [column 6, lines 9-17]);

"a logical node comprised of a child dimension table and all dimension tables rooted at the child dimension table" (see [column 6, lines 10-25] wherein each snowflake is equivalent to Applicant's "logical node");

"an optimization module adapted to pledge said logical node for push down to said fact table" (see [column 7, lines 45-67] and [column 8, lines 1-60] wherein snowflake is equivalent to Applicant's logical node, and the including the snowflake in the plan is equivalent to Applicant's "push down to said fact table").

As to claim 8, this claim is rejected based on arguments given above for rejected claim 7 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein said optimization module is adapted to commit an optimal number of logical nodes for push down to said fact table" (see [column 5, lines 20-30] and [column 8, lines 25-54] wherein query optimizer is equivalent to Applicant's "optimization module", each snowflake is equivalent to Applicant's "logical node" and the including of snowflake in the plan as disclosed is equivalent to Applicant's "push down to said fact table").

As to claim 9, this claim is rejected based on arguments given above for rejected claim 7 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein the step of creation of said logical node reduces a snowflake schema to a star schema" (see [column 6, lines 39-45] wherein candidate snowflake root is equivalent to Applicant's "logical node", and a fact table connecting to a set of snowflakes presents a star schema).

As to claim 10, this claim is rejected based on arguments given above for rejected claim 7 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein said optimization module comprises means for calculation of a cumulative selectivity for said logical node" (see [column 7, lines 5-15] where weight of a matching index is

equivalent to Applicant's "cumulative selectivity" and snowflake root table is equivalent to Applicant's "logical node").

As to claim 11, this claim is rejected based on arguments given above for rejected claim 10 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein said calculation means includes a presentation of all selectivities for all dimension tables in said logical node" (see [column 7, lines 5-15] wherein selectivity of all the join predicates is equivalent to Applicant's "all selectivities from all dimension tables").

As to claim 12, this claim is rejected based on arguments given above for rejected claim 7 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein said logical node reduces search space traversal" (see [column 7, lines 45-65] wherein the disclosure of including only subnodes having filtering effects implies the reduction of search space traversal as illustrated in Applicant's claim language).

As to claim 13, Lindsay et al. teach:

"A article" (see [column 4, lines 35-45]) comprising:

"a computer-readable signal-bearing medium" (see [column 5, lines 30-40]);

"means in the medium for storing data in a relational database having fact table and at least two child dimension tables" (see [column 4, lines 65-67] and [column 6, lines 3-15]);

"means in the medium for creating a logical node comprised said child dimension table and all dimension tables rooted at said child dimension table" (see [column 6, lines 10-20] wherein each snowflake is equivalent to Applicant's "logical node"); and

"means in the medium for determining commitment of said logical node for push down to said fact table" (see [column 7, lines 45-67] and [column 8, lines 1-60] wherein snowflake is equivalent to Applicant's logical node, and the including the snowflake in the plan is equivalent to Applicant's "push down to said fact table").

As to claim 14, this claim is rejected based on arguments given above for rejected claim 13 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein the medium is selected from a group consisting of: a recordable data storage medium, and a modulated carrier signal" (see [column 5, lines 30-60]).

As to claim 15, this claim is rejected based on arguments given above for rejected claim 13 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein said means for determining commitment of said logical node for push down to said fact table includes committing an optimal quantity of logical nodes for push down to said fact table" (see [column 5, lines 20-30] and [column 8, lines 25-54] wherein query optimizer is equivalent to Applicant's "optimization module", each snowflake is equivalent to Applicant's

"logical node" and the including of snowflake in the plan as disclosed is equivalent to Applicant's "push down to said fact table").

As to claim 16, this claim is rejected based on arguments given above for rejected claim 13 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein said means for creating said logical node reduces a snowflake schema of said database to a star schema" (see [column 6, lines 39-45] wherein candidate snowflake root is equivalent to Applicant's "logical node", and a fact table connecting to a set of snowflakes presents a star schema).

As to claim 17, this claim is rejected based on arguments given above for rejected claim 13 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein said means for determining commitment of said logical node for push down to said fact table includes means for calculating a cumulative selectivity for said logical node" (see [column 7, lines 5-15] where weight of a matching index is equivalent to Applicant's "cumulative selectivity" and snowflake root table is equivalent to Applicant's "logical node").

As to claim 18, this claim is rejected based on arguments given above for rejected claim 17 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein said means for calculating a cumulative selectivity for said logical node includes a presentation of all selectivities for all dimension tables in said logical node" (see [column 7, lines 5-15] wherein selectivity of all the join predicates is equivalent to Applicant's "all selectivities from all dimension tables").

As to claim 19, this claim is rejected based on arguments given above for rejected claim 13 and is similarly rejected including the following:

Lindsay et al. teach:

"wherein said means for determining commitment of said logical node for push down to said fact table includes mitigation of search space traversal" (see [column 7, lines 45-65] wherein the disclosure of including only subnodes having filtering effects implies the reduction of search space traversal as illustrated in Applicant's claim language).

8. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Paulley (US Patent No 6,516,310) teaches a deterministic branch-and-bound join enumeration method for efficiently optimize complex queries with high join degree and cost-based pruning of the search space.

Jakobsson et al. (US Patent No 5,848,408) teach method for executing star queries including snowfake queries by adding subqueries which are generated based on join predicates and constraints on dimension tables that contained in the original query.

Leslie (US Patent No 7,010,516) teaches a method for optimizing a database management system process of a query based on selectivity estimate.

Liu et al. (US Patent No 6,397,204) teach a system, method and program for joining a multi-column table and at least two satellite tables.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong-Thao Cao whose telephone number is (571) 272-2735. The examiner can normally be reached on 8:30 AM - 5:00 PM (Mon - Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PTC

March 10, 2006

Primary Examiner
Art Unit 2167